

# 55140 Sensor

## Miniature Flange Mounting

RoHS



### Description

The 55140 is a small flange mounting hall effect sensor occupying only 3.22cm<sup>2</sup> (0.500"²) board space with a choice of digital, or programmable analog outputs. It is available as three-wire (voltage output) or two-wire (current output) versions. Its case design enables screw or adhesive mounting and the sensor is capable of switching up to 24Vdc and 20mA. It comes with a range of sensitivity and cable length options.

### Features & Benefits

- Magnetically operated position sensor
- Digital and programmable analog types available
- Medium, high or programmable sensitivities
- Three-wire (voltage output) or two-wire (current output) versions
- Vibration 50g max. @ 50-2,000Hz
- Shock 150g max. @ 11ms ½ Sine
- Reverse/Over voltage protection
- Built in temperature compensation
- High switching speed up to 12kHz
- Long life; up to 20 billion operations
- Operates in static or dynamic magnetic field
- RoHS Compliant

### Additional Information



Resources



Accessories



Samples

### Applications

- Position and limit sensing
- RPM measurement
- Commutation of brushless DC motors
- Flow metering
- Angle sensing
- Magnetic encoders

### Dimensions

Dimensions in mm (inch)

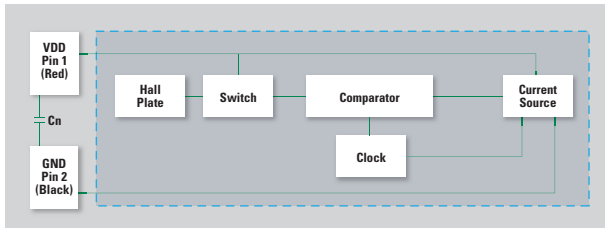


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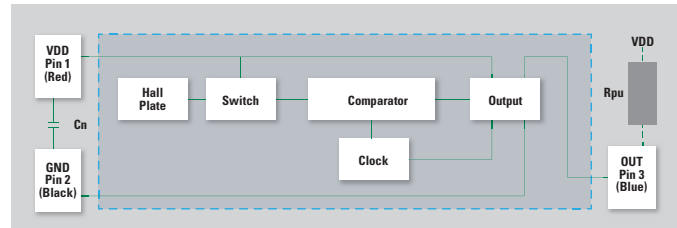
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### Block Diagram

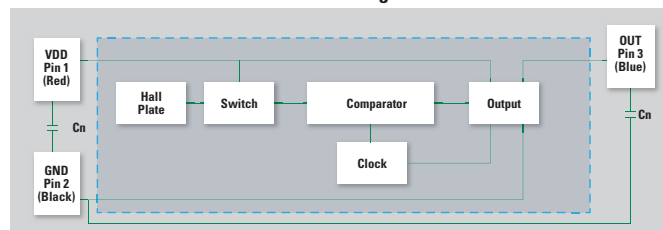
#### Two-wire Version



#### Three-wire Version



#### Three-wire Analog Version



#### Notes:

1. Add capacitor Cn as shown, close to the sensor, for transient suppression if required.
2. Add pull-up resistor Rpu as shown for sinking output. The Rpu value should be calculated using your supply voltage while keeping the ON state current at a level below the maximum.  
 $R_{pu} = V_{DD}/I_o$ ;  $R_{pu} = 12V_{dc}/10mA = 1.2k\Omega$

### T1 - Electrical Ratings

2-Wire Hall Switch (2M)

Hall Type			Digital Switch 2-Wire (Current Output)
Supply Voltage <sup>1</sup>	Absolute Ratings	Vdc	-18 to +28
	Operate	Vdc	+3 to +24
	Overshoot Protection	Vdc - max	32
Current Consumption	Hall OFF	mA	5.0 to 6.9
	Hall ON	mA	12.0 to 17.0
Switching Speed	-	kHz	12
Temperature	Operating	C	-40 to +100

#### Notes:

1. It is assumed the product will operate within the normal Supply Voltage of +24Vdc maximum.

### T2 - Electrical Ratings

3-Wire Hall Switch & Analog Programmable (3H, 3M, & AP)

Hall Type			Digital Switch 3 - Wire (Voltage Output)	AP - Analog (Programmable Only) <sup>2</sup>
Supply Voltage <sup>1</sup>	Absolute Ratings	Vdc	-18 to +28	8.5
	Operate	Vdc	2.7 to 24	4.5 - 5.5
	Overshoot Protection	Vdc - max	32	16.0
Output High Voltage	Min	Vdc	Sinking Output	0.2
Output Low Voltage	Max	Vdc	0.4 @ 20mA	4.80
Output Current (continuously on)	Max	mA	25	-1.0 to +1.0
Current Consumption (from Supply)	-	mA	1.1 to 2.4	5.0 to 10.0
Switching Speed	-	kHz	12	2
Temperature	Operating	C	-40 to +100	-40 to +100

#### Notes:

1. It is assumed the product will operate within the normal Supply Voltage of +24Vdc maximum.
2. Sensor Voltage Output can be reprogrammed to best fit customer application (see LF Application Note)

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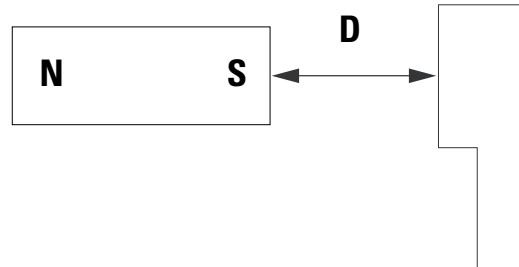
### Hall Sensitivity Options

Select Option	Hall Type	Sensitivity (Gauss)	Activate - D <sup>1</sup> mm (inch)
2M	2-Wire Switch	94	15.0
3M	3-Wire Switch	120	13.0
3H	3-Wire Switch	55	19.0
AP	Analog	Programmable Response <sup>2</sup>	

**Notes:**

1. Activation distances are approximate using NeFeB Magnet 21 x 7 x 4.7 (.827 x .276W x .185H) Littelfuse P/N H-58
2. Sensor Voltage Output can be reprogrammed to best fit customer application (see LF Application Note)


### Activation Detail



### Cable Length Specification

Cable 24 AWG 7/32 PVC 105°C UL1430/UL1569	
Select Option	Cable Length mm (inch)
02	300 (11.81)
05	1000 (39.37)

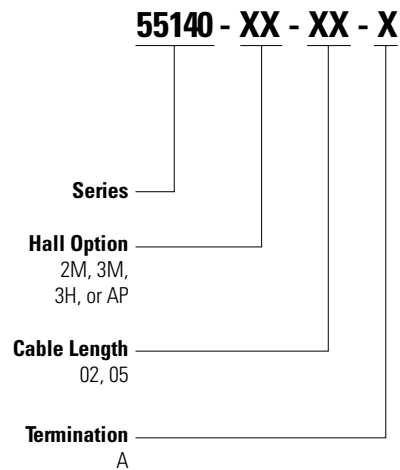
### Termination Detail

Select Option	Description (Two-wire versions illustrated)
A	Tinned leads (6.4±0.76)mm 

### Packaging Options

Packaging Option	Packaging Specification	Quantity	Quantity & Packaging Code	Taping Width
Bulk	Bulk	500	N/A	N/A

### Part Numbering System



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